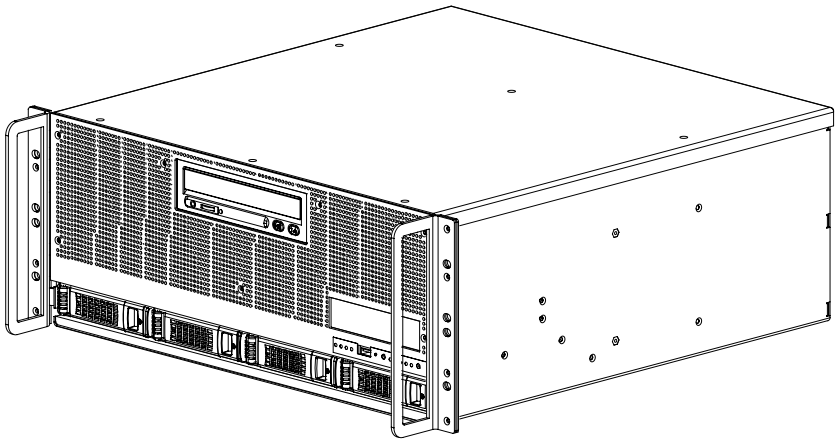
HATTELAND®
DISPLAY

USER MANUAL



HT 404XE STD - Rack Computer

User Manual HT 404XE STD	
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Please visit www.hatteland-display.com for the latest electronic version of this manual.

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WARNING: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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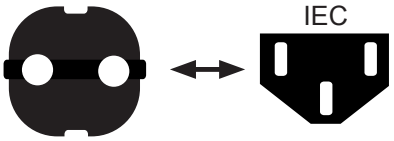
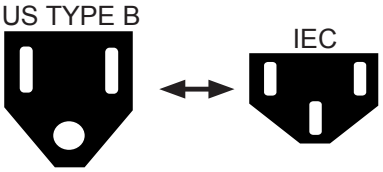
Contents of package

This product is shipped with:

Item	Description	Illustration
MEDIA STD01	1 pcs of Documentation and Driver DVD.	Menu and Driver browser for Microsoft® Windows®
FS-CABLE	1 pcs of power cable European Type F “Schuko” to IEC. Length 1.8m *Note: Power cable not included with DC models (if applicable).*	
80099	1 pcs of power cable US Type B plug to IEC. Length 1.8m *Note: Power cable not included with DC models (if applicable).*	
	Test Reports papers: 1 pcs of Product Declaration 1 pcs of Computer Checklist 1 pcs of BurnInTest Certificate	
	For computers that include 3rd party hardware; the package / accessories box may also include additional CD / HW / Information from 3rd party supplier(s).	

General

About this manual

The manual contains electrical, mechanical and input/output signal specifications. All specifications in this manual, due to manufacturing, new revisions and approvals, are subject to change without notice. However, the last update and revision of this manual are shown both on the frontpage and also in the “Revision History” chapter at the end of the manual.

Furthermore, for third party datasheet and user manuals, please see dedicated Documentation and Driver DVD delivered with the product or contact our sales/technical/helpdesk personnel for support.

About Hatteland Display

Hatteland Display is the leading technology provider of specialized display and computer products, delivering high quality, unique and customized solutions to the international maritime, naval and industrial markets.

The company represents innovation and quality to the system integrators world wide. Effective quality assurance and investment in sophisticated in-house manufacturing methods and facilities enable us to deliver Type Approved and Mil tested products. Our customer oriented approach, technical knowledge and dedication to R&D, makes us a trusted and preferred supplier of approved solutions, which are backed up by a strong service network.

www.hatteland-display.com

You will find our website full of useful information to help you make an informed choice as to the right product for your needs. You will find detailed product descriptions and specifications for the entire range on Displays, Computers and Panel Computers, Military solutions as well as the range of supporting accessories. The site carries a wealth of information regarding our product testing and approvals in addition to company contact information for our various offices around the world, the global service centers and the technical help desk, all ensuring the best possible support wherever you, or your vessel, may be in the world.

Contact Information

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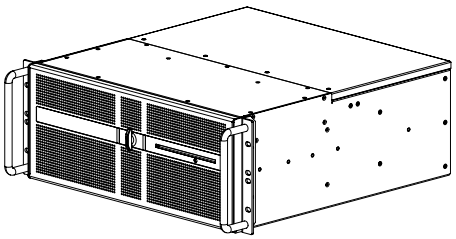
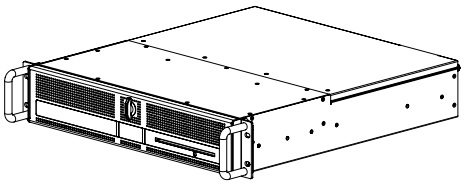
For an up-2-date list, please visit www.hatteland-display.com/locations

Computers introduction

Hatteland Display's range of type-approved computers is designed to perform in harsh environments while providing the performance and flexibility you expect. We offer rack mount and black box/standalone computer solutions for every need. Our computers are used by system integrators, boat builders and end-users and can be found on all vessel types, all over the world.

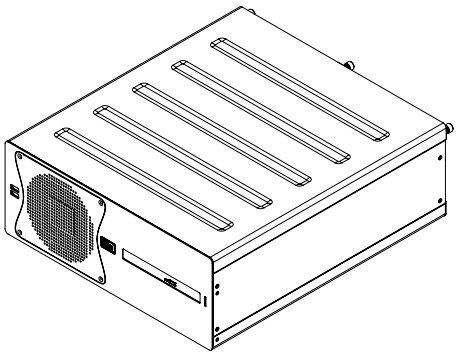


If you are looking for a high quality computer for navigation, monitoring or entertainment solutions, Hatteland Display can fulfil your high expectations at a reasonable cost.



Our computer range covers all eventualities and requirements. We offer a wide range of processor choices, HDD and power options, and solid state technology, neatly engineered within industry standard form factors such as 19" rack mount, 2U, 3U and 4U.

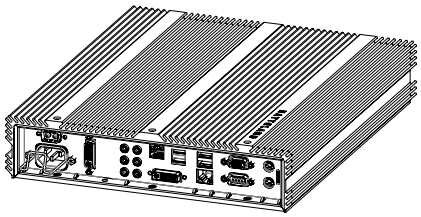
We continually develop our computers portfolio to make the best use of emerging computer technology so you can be sure that your Hatteland Display computer offers the power needed to run modern applications, with the flexibility to be installed wherever you want, for any marine use.



Designed to perform in harsh environments...

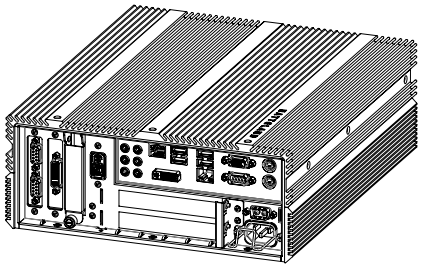
Winner of Red Dot awards 2009 / 2007

In 2009 the Hatteland Display HT C01 standalone computer won a prestigous Red Dot Award with Honourable Mention distinction, sucessfull detail solution.



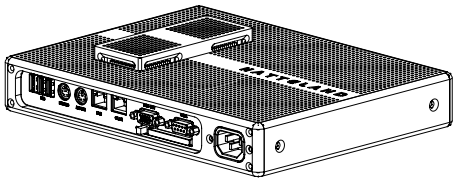
The Design Zentrum Nordrhein Westfalen in Germany has been marking outstanding international product design with its famous and highly regarded dot since 1955. The Red Dot Product Design Award is an annual international awards scheme where products from all industries are chosen for their innovative visual and industrial design.

In 2007 the Hatteland Display Series 2 Display/Panel Computers range won the Red Dot Award for the overall design and modular backpack concept, which docks into the screen at the back, comprises either the typical display connections or a fully equipped panel computer. Even the computer backpack can operate on its own as a stand-alone computer.

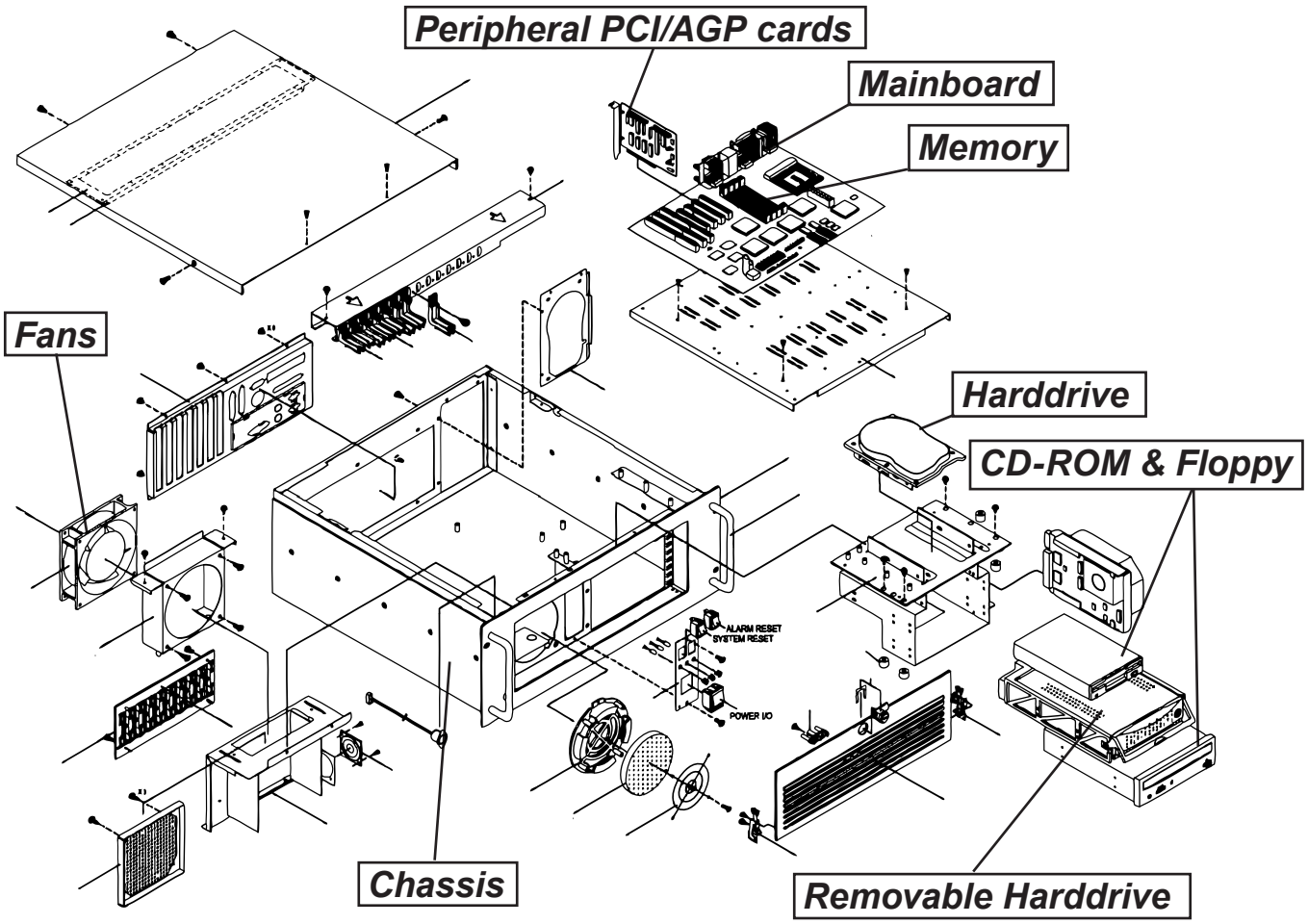


reddot design award
honourable mention 2009

reddot design award
winner 2007



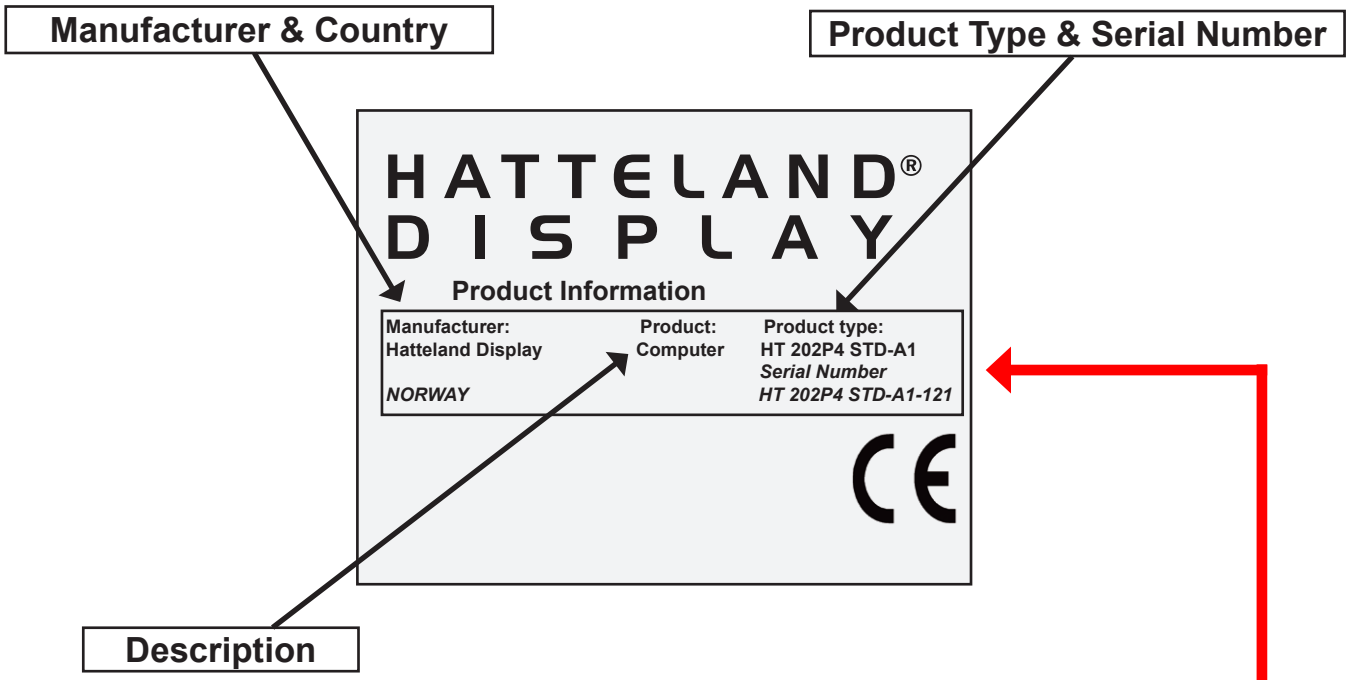
Basic Construction Rack Computers



IND100209-1

Product Labels (Example)

Serial Number Label



Product Type & Serial Number

```
HT XXAXX AAA-AX-XXX NOMENCLATURE
HT 202P4 STD-A1-121 Example
                  └─Serial Number
                 └──Hardware Sub Version (AC-Odd / DC-Even number)
               └────Standard Term ID or Customized Term ID
            └───────Processor/CPU Type ID
          └─────────Mechanical Chassis/Cabinet ID
        └───────────Rack Size ID (2=2U - 4=4U - B=Black Box)
     └──────────────Manufacturer ID/Product Series ID
```

Warranty Label

This label may be present on the product (hardware dependent). If you are to perform service on a unit still under warranty, the warranty will be void if this label is attempted removed, re-glued or removed completely. This label is usually located on the back of the product and covers an mechanical gap/edge or protects a key screw. This is to enable service departments determine if there has been any unauthorized service on a product still under warranty.

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Installation

General Installation Recommendations

Installation and mounting of computers

1. Units may be intended for various methods of installation or mounting (rack mounting, panel mounting, bracket mounting, ceiling/wall mounting); for details, please see the relevant mechanical drawings.

2. Adequate ventilation is a necessary prerequisite for the life of the unit. The air inlet and outlet openings must definitely be kept clear; coverings which restrict ventilation are not permissible. The product might be without any ventilation aperatures which means pt.2 does not apply.

3. Exposure to direct sunlight can cause a considerable increase in the temperature of the unit, and might under certain circumstances lead to overtemperature. This point should already be taken into consideration when the bridge equipment is being planned (sun shades, distance from the windows, ventilation, etc.)

4. Space necessary for ventilation, for cable inlets, for the operating procedures and for maintenance, must be provided.

5. To further improve the cooling of the unit we recommend installing Cooling Fans underneath blowing upwards into the unit air inlet. This may be required in high temperature applications and also when there is reason to expect temperature problems due to non-optimal way of mounting.

6. For DC powered computer units proper grounding must be achieved by connecting a wire from the unit's ground (GND) screw (as indicated on the unit with a icon) to the grounding in your installation setup.

The wire should have a cross sectional area of at least 6mm$^{2.}$ The GND screw is located near the other I/O connectors. Please review the "Physical Overview" chapter for further help.

7. Expose to heavy vibration and acoustic noise might under certain circumstances affect functionality and expected lifetime. This must be considered during system assembly and installation. Mounting position must carefully be selected to avoid any exposure of amplified vibration.

General mounting instructions

1. The useful life of the components of all Electronics Units generally decreases with increasing ambient temperature; it is therefore advisable to install such units in air-conditioned rooms. If there are no such facilities, these rooms must at least be dry, adequately ventilated and kept at a suitable temperature in order to prevent the formation of condensation inside the unit.

2. With most Electronic Units, cooling takes place via the surface of the casing. The cooling must not be impaired by partial covering of the unit or by installation of the unit in a confined cabinet.

3. In the area of the wheel house, the distance of each electronics unit from the magnetic standard compass or the magnetic steering compass must not be less than the permitted magnetic protection distance. This distance is measured from the centre of the magnetic system of the compass to the nearest point on the corresponding unit concerned. The exact distance is often mentioned in the specific product specifications.

4. Transportation damage, even if apparently insignificant at first glance, must immediately be examined and be reported to the freight carrier. The moment of setting-to-work of the equipment is too late, not only for reporting the damage but also for the supply of replacements.

5. The classification is only valid for approved mounting brackets provided by Hatteland Display. The unit shall be mounted stand-alone without any devices or loose parts placed at or nearby the unit. Any other type of mounting might require test and re-classification.

Cables

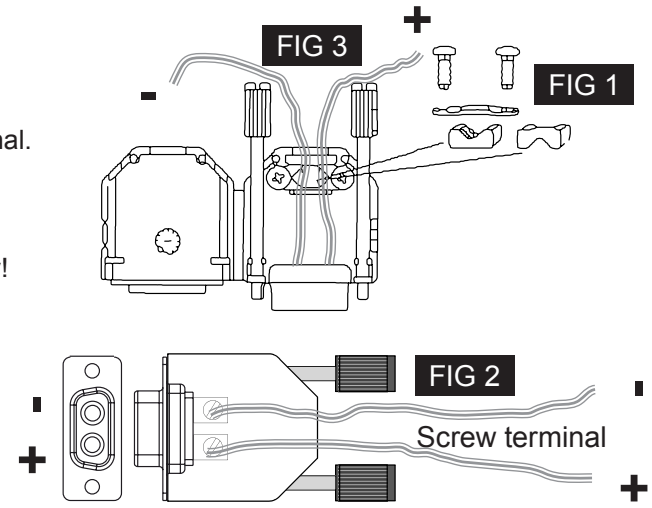
Use only high quality shielded signal cables. For RGB/DVI cables use only cables with separate coax for Red, Green and Blue.

Configuring DC power input housing connector

Note: Only applicable for certain models!
For installations that require DC power input, use the provided 2-pin DC Power Input housing with internal cable screw terminal.

1: Open the housing
2: Unmount the fasteners. (FIG 1)
3: Mount power cables to screw terminal (FIG 2). Note polarity!
4: Secure the cable tightly with fasteners (FIG 3, FIG 1)
5: Close the housing

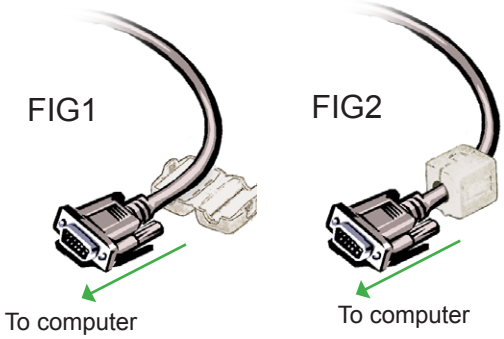
Note: Please check polarity before connecting any cables to the screw terminal.



Ferrites

On selected products, the ferrites prevent high frequency electrical noise (radio frequency interference) from exiting or entering the equipment. To verify if your product require this, please see the “Physical Overview” chapter in this manual. The ferrites are part of the contents of the package also specified in the “Contents Of Package” chapter early in this manual. **The ferrites must be mounted on specific cables to fully comply with the Type Approvals!**

The ferrites should be mounted (clipped in place on the cable as shown in illustration) as close as possible to the cable connector on the rear side of the computer product. Open up the ferrite, place the cable inside as shown in FIG1, and then gently close it until a click can be heard (FIG2).



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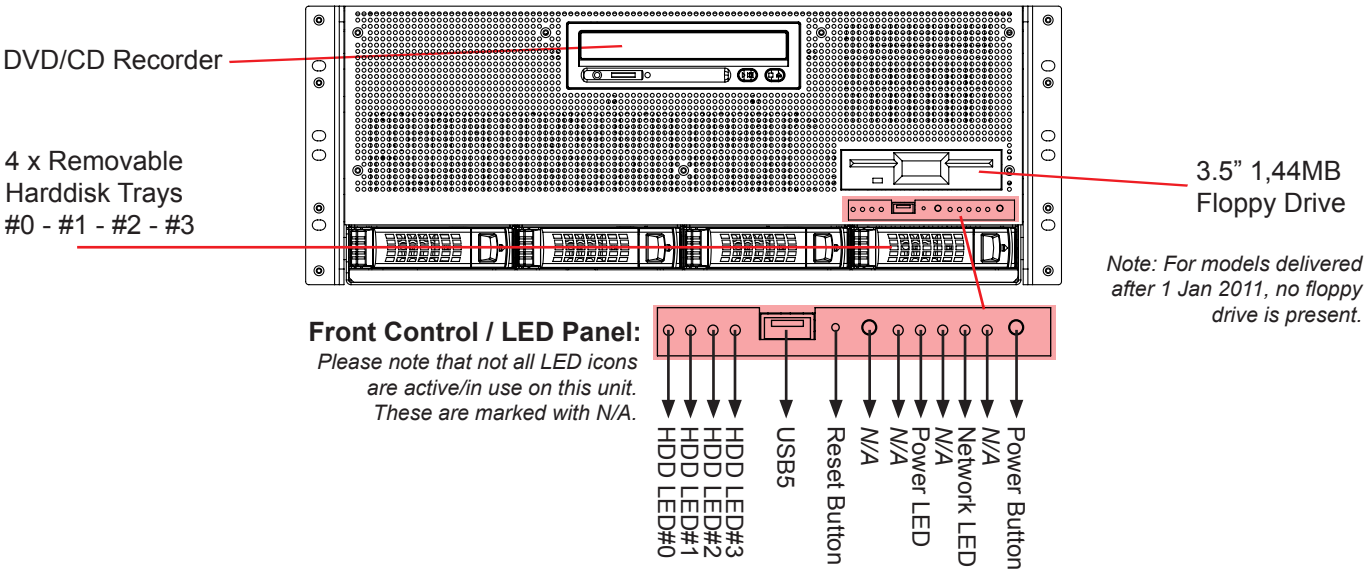
Operation

Physical Overview - HT 404XE STD-Ax

Front area of computer



Hard drive LED (HDD LED #0 / #1 / #2 / #3):

The hard drive indication (LEDs) will turn orange when there occur read/write activity to/from the corresponding hard drive, ranging from 1 to 4 pcs.

FRONT USB5 INPUT/OUTPUT:

Supports any USB1.1 (12Mbps) or USB2.0 (480Mbps) compliant peripherals. Drivers for most USB devices are usually included in operating system or on separate installation CD’s delivered with products. USB 1.1 devices will operate in USB 1.1 mode (12 Mbps).

Reset Button: (Hard Reset):

To reset the computer in case of driver/software failure, press this button. It is located beyond the edge of the label, to press it use a screwdriver or a pen tip. This reset function is a hard reset which means the operating system will NOT be warned. Using this reset method may damage files and/or operating system in worst case scenarios. Precaution should be taken when using this. To perform a safe software reset, use the operating system own reset functionality if possible or press the power button which in most cases automatically will give the option to restart the unit.

Power LED:

Whenever the computer is turned on, this power indication (LED) will turn blue.

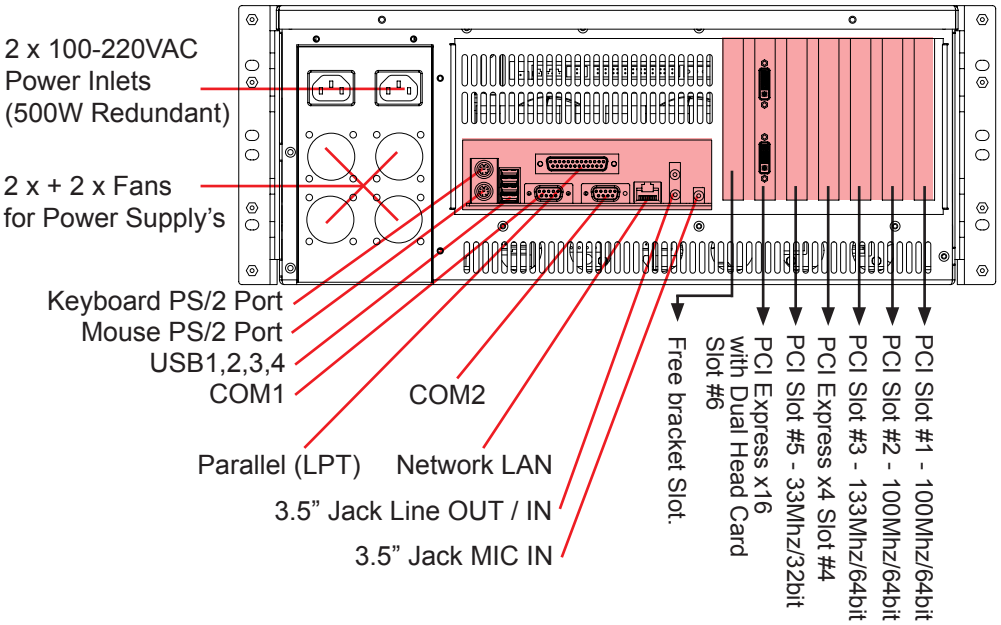
Network LED:

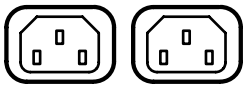
Whenever there is activity on the network, this LED will turn green. Usually blinking regulary.

Power Button:

To turn ON the computer, press down the button and release it immediately. The corresponding operating system will automatically boot. To turn OFF the computer,press the button and release it.The operating system may require additionally tasks to be performed before computer shuts down and turns off the unit. Pressing and holding it for 3-4 seconds will turn it immediately off.

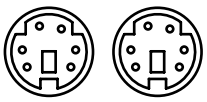
Connector area of computer





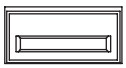
Power INPUT: (2 x Redundant 500W)

The internal AC power modules supports both 110-240VAC (47-63Hz) power inputs using standard IEC European power plugs. For security reasons and reability, if one powermodule should fail it will sound an internal beep alarm. The other one will still operate the unit so that no data will be lost or damaged. The power modules are hot-swap operated, so you can change the defective power module with a new one instantly while the unit is powered by the other one. To remove a defective module, verify that the power led (green) is not lit and that the fans are not rotating. Pull it gently out with the handle. Reinsert a new module gently and verify that the power led are green lit, and the fans are rotating. If the new module do not appear to work, the unit must be shut down and a qualified service personnel should service/ investigate the mainboard/unit. Both power modules have their own unique POWER ON/OFF switch marked with **[0 1]**



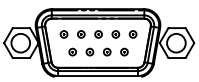
PS/2 Keyboard and PS/2 Mouse INPUTS:

Connect the PS/2 keyboard cable to the PS/2 5P Connector (female) marked with a keyboard icon in the metal casing. Connect the PS/2 mouse cable to the PS/2 5P Connector (female) marked with a mouse icon in the metal casing. Also check the illustration above to determine its locations.



USB1,2,3,4 INPUT/OUTPUT:

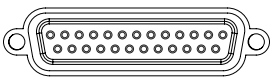
Supports any USB1.1 (12Mbps) or USB2.0 (480Mbps) compliant peripherals. Drivers for most USB devices are useally included in operating system or on separate installation CD's delivered with product. USB 1.1 devices will operate in USB 1.1 mode (12 Mbps).



COM1,2 Serial Ports INPUT/OUTPUT:

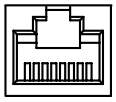
Supports RS232 using D-SUB 9P Male connectors. Fasten the cable to the connector using the provided screws on the cable housing itself. Two unique ports are available.

Physical Overview - HT 404XE STD-Ax



LPT1 Parallel Port INPUT/OUTPUT:

Standard LPT1 Printer/Parallel (SPP/EPP/ECP) port using a D-SUB 25P Female connector. Fasten the cable to the connector using the provided screws on the cable housing itself.



Network INPUT/OUTPUT:

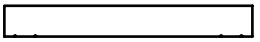
Supports 10/100/1000Mbps Ethernet (GBLAN). Suitable for twisted pair cables CAT.5E. Make sure the network cable connector ”clicks” into the RJ-45 connector.

Audio INPUT/OUTPUT:

AC’97 audio support. Either function as Stereo Line In, Stereo Line Out and Stereo MIC In or as 6-channel surround out where configuration is as follows:

Line In - Rear Sound L/R
Line Out - Front Sound L/R
Mic In - Center/Subwoofer Sound.

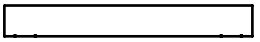
To enable surround sound, please install audio driver from attached driver cd for the motherboard.
All connectors are 3.5” Jack Stereo.



PCI Slots 1,2,3 & 5:

Supports PCI (Short Length / Standard Profile) card in 4 available slots. In order to mount PCI cards yourselves, the chassis of the unit must be removed. Please see motherboard manual for detailed specifications. (Available on attached documentation CD delivered with the product).

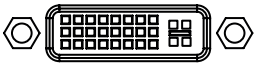
Slot 1,2 - 100MHz/64bit (3.3V)
Slot 3 - 133Mhz/64bit (3.3V)
Slot 5 - 33Mhz/32bit (5V)



PCI-Express Slots 4 & 6:

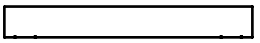
Accepts standard profiled PCI-Express cards. By default, the unit is installed with a DualHead graphics card in Slot 6. In order to mount PCI-E cards yourselves, the chassis of the unit must be removed. Please see motherboard manual for detailed specifications. (Available on attached documentation CD delivered with the product).

Slot 4 - x4 @ 2GB/Sec
Slot 6 - x16 @ 4GB/Sec



DVI-I DUAL OUT:

Connect your DVI cables to the DVI-I 24P Connectors (female) on the rear side of the unit. If possible, screw the DVI cables to the connectors and make sure you don’t bend any of the pins inside the DVI cable connector. Please see graphics card manual. (Available on attached documentation CD delivered with the product).



Free Bracket Slot:

You may exchange this bracket to any custom bracket of your choice with custom functionality.

Specifications

Note: All specifications are subject to change without prior notice!

TECHNICAL DESCRIPTION

Computer Specifications: (Standard Model)		**Connector Type:**
• Installed OS	: None or Option Dependent	
• Processor	: 1 x Intel® Xeon® 64bit 3.0GHz / Socket 604 / 800MHz FSB (up to 3.6GHz possible)	
• Graphics Card	: Matrox DualHead® P690 Graphics Card, DVI-I, PCIe 16X, 128MB, Max 2048x1536 @ 85Hz	2 x 24P DVI-I
• System Chipset	: Intel® E7525 (Tumwater)	
• BIOS	: Phoenix BIOS 8Mb Eeprom Flash	
• PCI Slots	: 1 x (x16) PCI-Express slot (Used for above Graphics Card)	
	: 1 x (x1) PCI-Express slot	
	: 1 x 64-bit 133MHz PCI-X (3.3v) slot	
	: 1 x 64-bit 100MHz PCI-X (3.3V) slot	
	: 1 x 32-bit 33MHz PCI (5V) slot	
• Memory	: 2 x 1024MB in 2 slots, Dual Channel DDR266/333 Registered ECC) - Up to 32GB RAM possible	
• SATA Interface	: Option Dependent	
• DVD/CD DRIVE	: DVD ± Dual/CD R/W Combo Recorder	
	: Read: 48x (CD) / 16x (DVD)	
	: Write: 48x (CD) / 16x (DVD R) / 6x (DVD-R DL) / 8x (DVD+R DL)	
	: Rewrite: 32x (CD) / 6x (DVD-RW) / 8x (DVD+RW)	
• Floppy Drive (FDD)	: None	
• Ethernet	: 1 x 10/100/1000Mbps Intel® 82545GM single port GB with Wake-On-Lan	1 x RJ-45
• Parallel Port (LPT)	: 1 x ECP/EPP mode	1 x DB25F
• Serial Ports	: 2 x RS-232 Fast Uart 16550	2 x DB9M
• USB Ports	: 4 x USB rear ports + 1 x USB front port - Supports 2.0 & 1.1	
• Keyboard Port	: Standard PS/2 mini DIN connector	1 x PS/2
• Mouse Port	: Standard PS/2 mini DIN connector	1 x PS/2
• Audio	: AC-97, 6-channel surround with LINE IN, LINE OUT, MIC IN	3 x JACKS
• Speaker	: On-board	
• Power Manager	: ACPI/APM	

Power Specifications:

Power Supply Options:

• 115-230VAC input 47-63Hz : Model HT 404XE STD-Ax (500W redundant - Autorange)

Power Consumption:

• Operating : TBD(TYP) - TBD (MAX)

Factory Options:	**Connector Type:**
• Additional Intel® Xeon® 64bit 3.0GHz processor (for dual processor operation)	
• Up to 4 x 500GB 3,5" SATA, 7200 RPM, 16MB Buffer HDD possible*	
• Fiber Fast Network Card	1 x ST
• Raid Controller - Modes 0,1,4,5,10 supported - Max 4 ports	4 x SATA
**Note: 2 x SATA ports internal (supports RAID 0,1) - For 4 x SATA ports an additional RAID controller card is required (see options below)*	

MECHANICAL DESCRIPTION

Physical Specifications:

• 482.50 (W) x 177.80 (H) x 506.5 (D) mm (19" x 4U x 450mm)
• 19.00" (W) x 7.00" (H) x 19.94" (D) (19" x 4U x 17.72")
• Weight: 25.5 kg
• 4U Rackmount Chassis
• Black heavy-duty steel chassis with handles

Environmental Considerations:

• Operating : Temperature -15 deg. C to +55 deg. C
Humidity up to 95%
• Storage : Temperature -20 deg. C to +60 deg. C
Humidity up to 95%

Safety Considerations:

Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Compass Safe Distance: HT 404XE STD Standard: 300cm Steering: 220cm

APPROVALS & CERTIFICATES

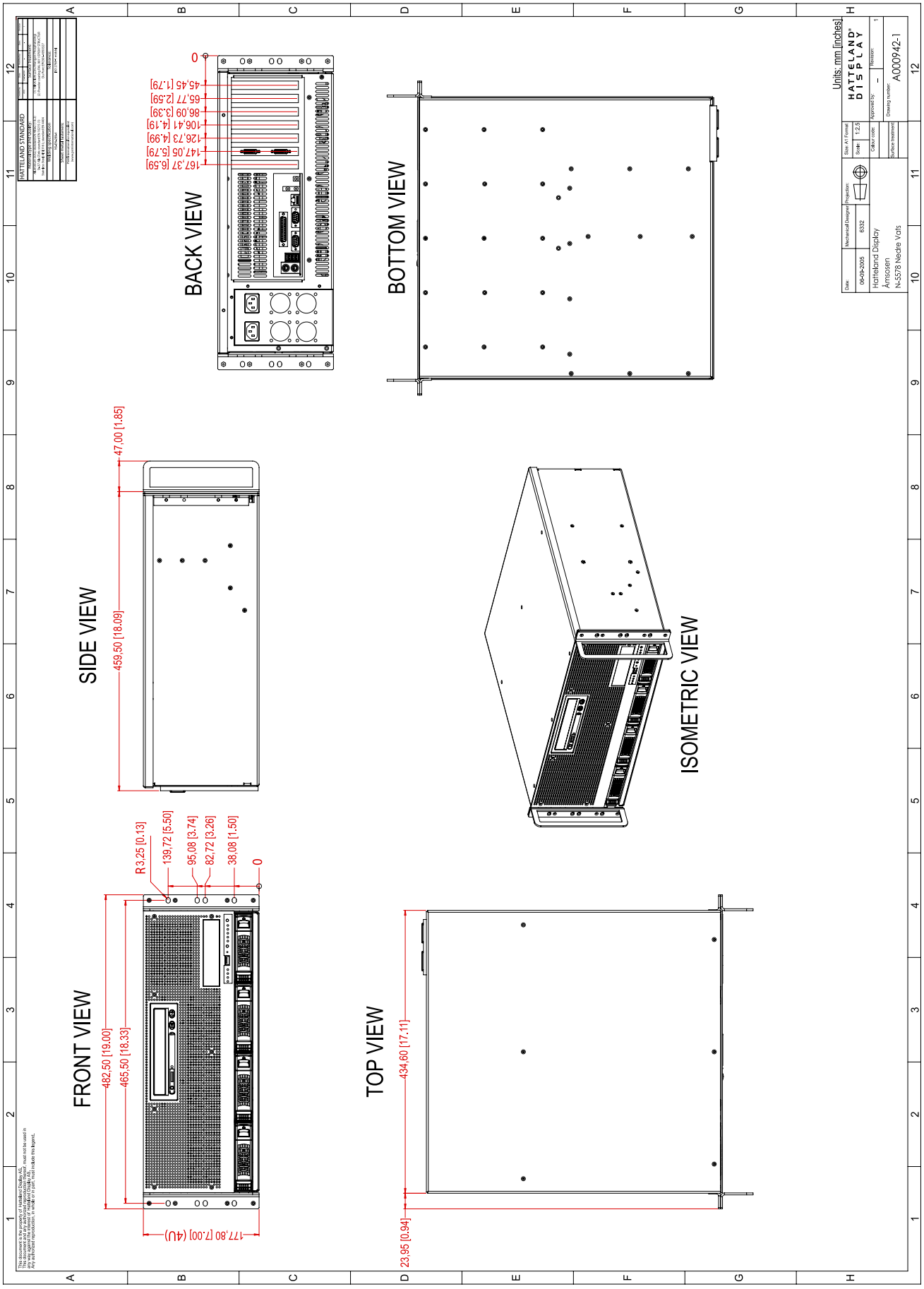
This product have been tested / type approved by the following classification societies:

EN60945 4th (IEC945 4th)
IACS E-10
CENELEC/SC 31-7 : EN 50016 EX-P

ABS - American Bureau of Shipping
ClassNK - Nippon Kaiji Kyokai
BV - Bureau Veritas

DNV - Det Norske Veritas
LRS - Lloyd's Register of Shipping
GL - Germanischer Lloyd

Technical Drawings



Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

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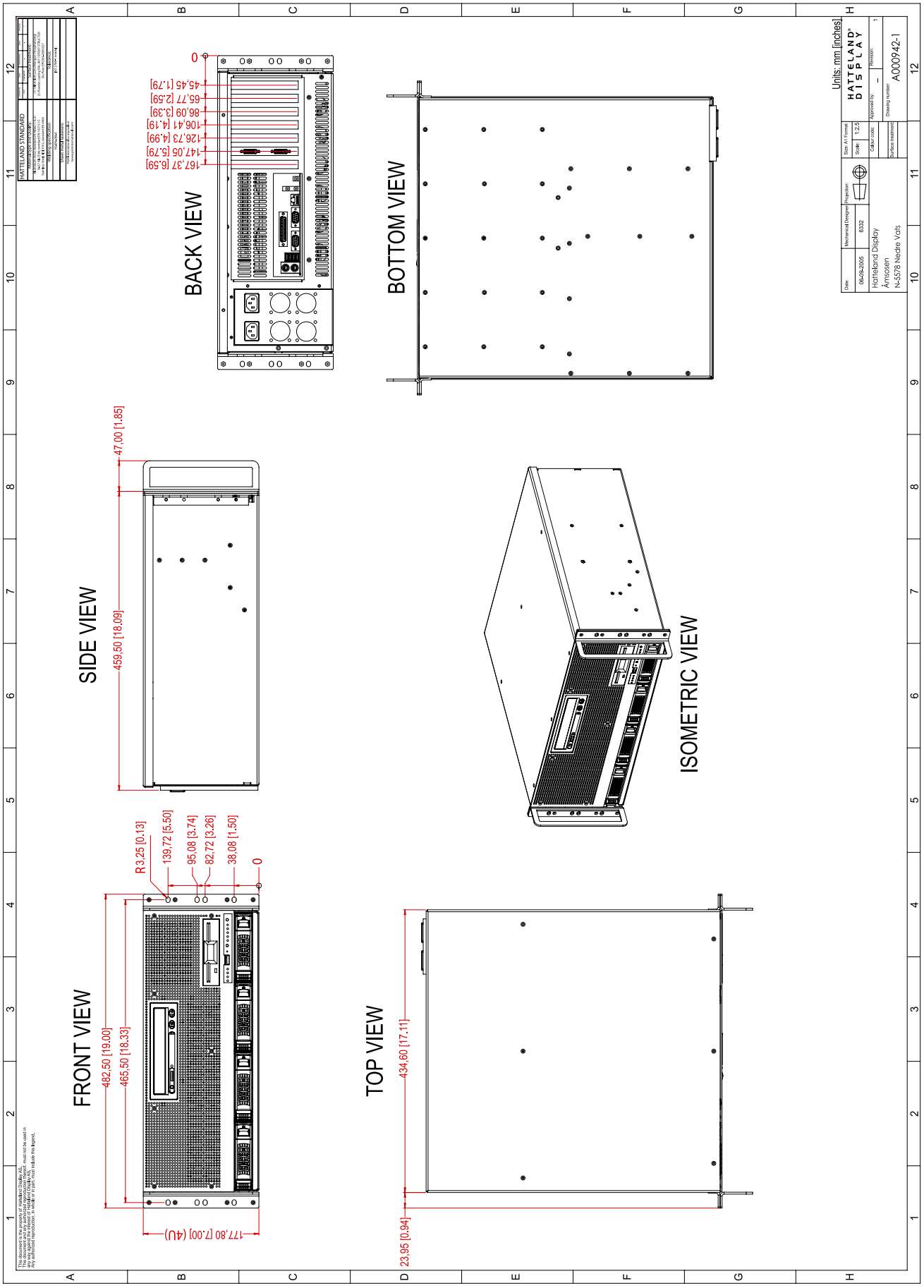

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

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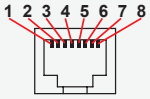
Appendixes

Pin Assignments - Common Connectors

Note: Not all connectors may be available on your specific product. This depends on the amount of additional hardware installed from factory, or customized solutions. These pin assignments are for the common connectors used. Connectors are seen from users Point Of View (POV).

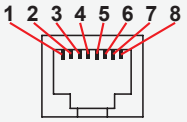
Pin Assignments - RJ45 10/100 LAN

Use category 5 - twisted pair cable



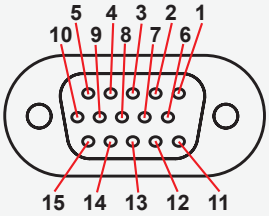
Pin 01 - TDP	Transmit Differential Pair (Positive)
Pin 02 - TDN	Transmit Differential Pair (Negative)
Pin 03 - RDP	Receive Differential Pair (Positive)
Pin 04 - NC	Not Connected
Pin 05 - NC	Not Connected
Pin 06 - RDN	Receive Differential Pair (Negative)
Pin 07 - NC	Not Connected
Pin 08 - NC	Not Connected

Pin Assignments - RJ45 10/100/1000 GBLAN



Pin 01 - D0P	Differential Pair 0 (Positive)
Pin 02 - D0N	Differential Pair 0 (Negative)
Pin 03 - D1P	Differential Pair 1 (Positive)
Pin 04 - D2P	Differential Pair 2 (Positive)
Pin 05 - D2N	Differential Pair 2 (Negative)
Pin 06 - D1N	Differential Pair 1 (Negative)
Pin 07 - D3P	Differential Pair 3 (Positive)
Pin 08 - D3N	Differential Pair 3 (Negative)

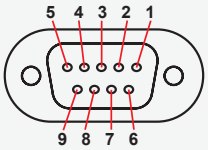
Pin Assignments - 15P HD RGB VGA



Pin 01	Red, analog
Pin 02	Green, analog
Pin 03	Blue, analog
Pin 04	Reserved for monitor ID bit 2 (grounded)
Pin 05	Digital ground
Pin 06	Analog ground red
Pin 07	Analog ground green
Pin 08	Analog ground blue
Pin 09	+5V power supply for DDC (optional)
Pin 10	Digital ground
Pin 11	Reserved for monitor ID bit 0 (grounded)
Pin 12	DDC serial data
Pin 13	Horizontal sync or composite sync, input
Pin 14	Vertical sync, input
Pin 15	DDC serial clock

Pin Assignments - 9P Serial COM RS-232

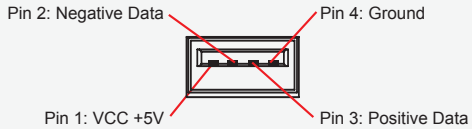
This connector is commonly used for:



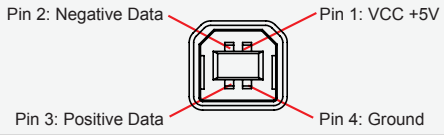
Pin 01 - DCD	Data Carry Detect
Pin 02 - SIN	Serial In or Receive Data
Pin 03 - SOUT	Serial Out or Transmit Data
Pin 04 - DTR	Data Terminal Ready
Pin 05 - GND	Ground
Pin 06 - DSR	Data Set Ready
Pin 07 - RTS	Request To Send
Pin 08 - CTS	Clear To Send
Pin 09 - RI	Ring Indicate

Note: The table above lists commonly-used RS-232 signals and pin assignments, however Serial Communication for Hatteland Display products may vary from product to product to support different end user systems. Please check additional pin assignments section in this manual for specific RS-232/RS-422/RS-485 pin assignments for your exact product.

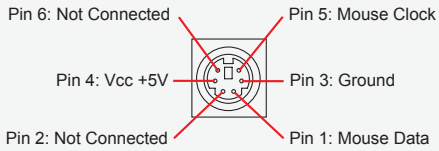
Pin Assignments - USB TYPE A



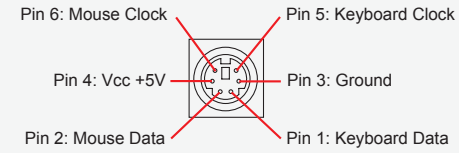
Pin Assignments - USB TYPE B



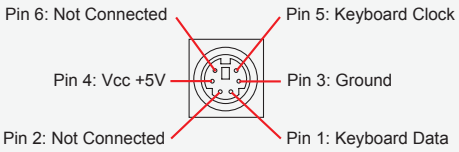
Pin Assignments - 5P PS/2 MOUSE



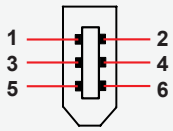
Pin Ass. - 5P PS/2 KEYBOARD+MOUSE Combined



Pin Assignments - 5P PS/2 KEYBOARD

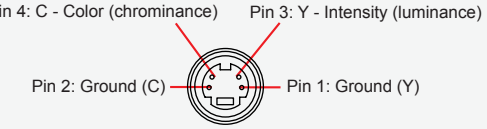


Pin Assignments - FIREWIRE IEEE-1394

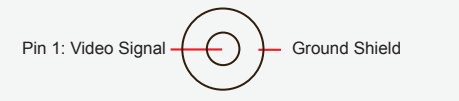


Pin 01 - VCC	Power
Pin 02 - GND	Grounding for power and inner cable shield
Pin 03 - TPB-	Twisted Pair B- Receive Strobe, Transmit Data
Pin 04 - TPB+	Twisted Pair B+ Receive Strobe, Transmit Data
Pin 05 - TPA-	Twisted Pair A- Transmit Strobe, Receive Data
Pin 06 - TPA+	Twisted Pair A+ Transmit Strobe, Receive Data

Pin Assignments - 5P S-VHS/S-VIDEO

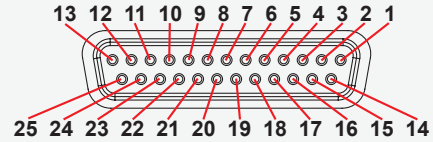


Pin Assignments - RCA/BNC 1P COMP. VIDEO



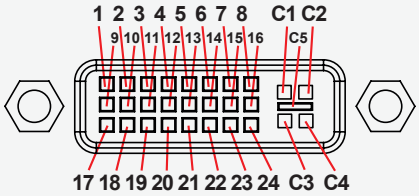
Pin Assignments - Common Connectors

Pin Assignments - 25P Parallel



Pin 01 - STROBE	This signal indicates to the printer that data at PD7..0 are valid.
Pin 02 - DATA0	Parallel data bus from PC board to printer. The data line are able to operate in PS/2 compatible bi-directional mode.
Pin 03 - DATA1	Same as Pin 02
Pin 04 - DATA2	Same as Pin 02
Pin 05 - DATA3	Same as Pin 02
Pin 06 - DATA4	Same as Pin 02
Pin 07 - DATA5	Same as Pin 02
Pin 08 - DATA6	Same as Pin 02
Pin 09 - DATA7	Same as Pin 02
Pin 10 - ACK	Signal from printer indicating that the printer has received the data and is ready to accept further data.
Pin 11 - BUSY	Signal from printer indicating that the printer cannot accept further data.
Pin 12 - PE	Signal from printer indicating that the printer is out of paper.
Pin 13 - SELECT	Signal from printer to indicate that the printer is selected.
Pin 14 - AUTO FEED	This active low output causes the printer to add a line feed after each line printed.
Pin 15 - ERR#	Signal from printer indicating that an error has been detected.
Pin 16 - INIT#	This active low output initialises (resets) the printer.
Pin 17 - SLIN#	Signal to select the printer sent from CPU board to printer.
Pin 18 - GND	Ground
Pin 19 - GND	Ground
Pin 20 - GND	Ground
Pin 21 - GND	Ground
Pin 22 - GND	Ground
Pin 23 - GND	Ground
Pin 24 - GND	Ground
Pin 25 - GND	Ground

Pin Assignments - 24P DVI-D & DVI-I



Pin 01	T.M.D.S. Data2 - (Digital - RED link 1)
Pin 02	T.M.D.S. Data2 + (Digital + RED link 1)
Pin 03	T.M.D.S. Data2/4 Shield
Pin 04	T.M.D.S. Data4 - (Digital - GREEN link 2)
Pin 05	T.M.D.S. Data4 + (Digital + GREEN link 2)
Pin 06	DDC Clock
Pin 07	DDC Data
Pin 08	Analog Vertical Sync (DVI-I only)
Pin 09	T.M.D.S. Data1 - (Digital - GREEN link 1)
Pin 10	T.M.D.S. Data1 + (Digital + GREEN link 1)
Pin 11	T.M.D.S. Data1/3 Shield
Pin 12	T.M.D.S. Data3 - (Digital - BLUE link 2)
Pin 13	T.M.D.S. Data3 + (Digital + BLUE link 2)
Pin 14	+5V Power (for standby mode)
Pin 15	Ground (for +5V and analog sync)
Pin 16	Hot Plug Detect
Pin 17	T.M.D.S. Data0 - (Digital - BLUE link 1) and digital sync.
Pin 18	T.M.D.S. Data0 + (Digital + BLUE link 1) and digital sync.
Pin 19	T.M.D.S. Data0/5 Shield
Pin 20	T.M.D.S. Data5 - (Digital - RED link 2)
Pin 21	T.M.D.S. Data5 + (Digital - RED link 2)
Pin 22	T.M.D.S. Clock Shield
Pin 23	T.M.D.S. Clock + (Digital clock + (Links 1 and 2)
Pin 24	T.M.D.S. Clock - (Digital clock - (Links 1 and 2)
Pin C1	Analog RED
Pin C2	Analog GREEN
Pin C3	Analog BLUE
Pin C4	Analog Horizontal Sync.
Pin C5	Analog Ground (return for RGB signals)

DDC = Display Data Channel /// T.M.D.S = Transition Minimized Differential Signal /// PIN C1,C2,C3,C4 = Only present on DVI-I connectors.
NOTE: Connector shows a DUAL LINK design, but some units may not support it. Only products with 1920x1200 or more in resolution require / support DUAL LINK.

Additional connector pinouts may be available in third party motherboard manuals, primarly for computers only. Please see manual/drivercd delivered with your product or own section in this user manual.

Basic Trouble-shooting

GENERAL ISSUES FOR TFT PANEL BASED PRODUCTS

Note: Applies for a range of various products. This is only suitable for general guidance.

NO PICTURE / LED BEHAVIOUR:
If there is no light at all in the LED at the FRONT, check power cables. If the LED in front is green then check if the brightness knob is turned to the right (max brightness). If still no picture, check if there is a VGA signal on the External VGA connector. If you have a picture on the external VGA connector please look in BIOS documentation/chapter for correct display settings in BIOS. Lack of image is most likely to be caused by incorrect connection, lack of power, or wrong BIOS settings.

SCROLLING / UNSTABLE IMAGE:
Signal cable may not be completely connected to computer or TFT display. Check the pin assignments and signal timings of the display and your video card with respect to recommended timing and pin assignments. Make sure that the video card is compatible and that it is properly seated / installed on the computer.

DISPLAY AREA IS NOT CENTERED / SIZED CORRECTLY
Make sure that a supported video mode has been selected on the display, or on the video card / system. If it is impossible to position the image correctly, i.e. the image adjustment controls will not move the image far enough, then test it again using another graphics card for the PC system. This situation may occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal, such as a signal splitter (please note that normally a signal splitter will not have any adverse effect). If it is impossible to change to the correct resolution/color depth, check if you have the right VGA driver installed in your system.

IMAGE APPEARANCE:
A faulty TFT panel can have black lines, pixel errors, failed sections, flickering or flashing image. Incorrect graphics card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, it may scroll, flicker badly or possibly even no image is present. Sparkling on the display may be a faulty TFT panel signal cable, and it needs service attention.

RGB Signal Only: Horizontal interference can usually be corrected by adjusting the PHASE (OSD menu).
Vertical interference can usually be corrected by adjusting the FREQUENCY (OSD menu).

DEW CONDENSATION BEHIND GLASS:
Note that this problem will not occur on bonded products. For non-bonded products, do the following:
Power on the TFT product and set brightness to 100%. Turn off any automatic screensavers on PC or similar. During minutes the dew will be gone. To speed up the process, use a fan heater for a reasonable time. Do not overheat the TFT product.

GENERAL ISSUES FOR COMPUTER BASED PRODUCTS

Note: Applies for a range of various products. This is only meant as a general guide.

CD-ROM FAILURE OR READ/DETECTION PROBLEMS:
If the product are operated/located in a area with extreme condensation, the CD/DVD drive may not work correctly due to condensation on the read head. Keep the product on for a while until it's reached normal operating temperature, and retry accessing discs. Otherwise, consider using USB memory sticks or alternative storage devices.

NO CD-ROM AVAILABLE ON YOUR PRODUCT FOR INSTALLING DRIVERS/SOFTWARE:
Please use USB memory sticks, USB Floppy drive, USB CD-Rom Drive or alternative storage devices to transfer/install software on CD-ROM-less units.

HATTELAND®
DISPLAY

Declaration of Conformity

We, manufacturer

Hatteland Display AS
Åmsosen, N-5578 Nedre Vats, Norway

declare under our sole responsibility that the JH MMD, JH MMC, JH STD, JH MIL, HM NMD, HM MIL, HM CMD, HT STD, HD MMD, HM MMD, HT MMC and HD MMC product ranges is in conformity with the following standards in accordance with the EMC Directive.

Low Voltage Directive 2006/95/EC
EN 60950

EMC Directive 2004/108/EC
EN 55022 Class A
EN 55024

Signature:.....
Frode Grindheim
Vice President Product Management
Nedre Vats, Norway

Signature:.....
Arne Kristiansen
Site Manager - Test & Commission Division
Oslo, Norway

CE

CE MARK FIRST AFFIXED DATE (11 March 2010)

IND100237-1

Return Of Goods Information

Return of goods:

(Applies not to warranty/normal service/repair of products)

Hatteland Display referenced as “manufacturer” in this document.

Before returning goods, please contact your system supplier before sending anything directly to manufacturer. When you return products after loan, test, evaulation or products subject for credit, you must ensure that all accessories received from our warehouse is returned. This applies to cables, powermodules and additional equipment except screws or similar, user manual, datasheets or other written paper documents. Furthermore, the product must not have any minor / medium or severe scratches, chemical spills or similar on the backcover, front frame or glass.

This is needed to credit the invoice 100%. Missing parts will not be subject for credit, and you will not get total credit for returned product. You will either be charged separately or the amount is withdrawn from the credit. If you decide to ship the missing items on the after hand, you will get 100% credit for that particular invoice or items received at manufacturer incoming goods control. Please contact our service/sales department if additional questions

Approved packaging methods/materials:

(Applies to all shipments to manufacturer)

When returning goods, please make sure you surround the product with the following material, whenever possible: Original packaging from manufacturer, firm foam material, bubble wrap or lots of PadPack paper or Foam chips/polyester wrapped in sealed plastic bags. In any case, always use a solid cardboard box to surround everything.

Not approved packaging methods/materials are: Foam chips, expanded polyester, clothes, nothing, or too little, or anything that will crumble and get into the ventilation holes of products and cardboard boxes that are not suitable to secure the product during shipment.

Terms Of Sale And Delivery

1) APPLICATION
The terms of sale and delivery apply for Hatteland Display.

2) PRICE

a) The price is per each, if nothing else has been stated, VAT not included. Price is based on the prices from our suppliers, current custom rates, taxes, rate of exchange and international raw material prices. We reserve ourselves the rights to adjustments in case of alternation on the above mentioned.

b) Included in the price is the supplier's standard packing. In case of re-packing/smaller quantities we reserve ourselves the right to add an additional sum for warrantable packing according to CECC 0015 (Basic inspection for protection of electrostatic sensitive devices)

3) VALIDITY
If nothing else has been stated in our quotation, the offer is valid for 30 days from the date of quotation.

4) PACKAGE QUOTATION
A package quotation means that all the components offered, must be ordered by us. If one component or more are removed from the quotation, the prices given in the package quotation are not valid.

5) TERMS OF PAYMENT
Cash on delivery or payment in advance. Net granted for companies, schools and institutions only, according to agreement. In case of too late payment 1.5% interest/month will be charged. Seller has mortage rights in the goods delivered until the purchase price, additional interests and charges have been paid in full. Accepted bill is not considered as payment until it has been honoured in full.

6) TIME OF DELIVERY
The quoted time of delivery is based on information from our suppliers. We disclaim any responsibility for the consequences of any delay or cancellation from our suppliers. Belated delivery gives not solely the right for cancellation.

7) DELIVERY POINT OF TIME
Goods are considered delivered to customer when handed over to charterer.

8) FREIGHT / PACKING / FORWARDING FEE
Hatteland Display AS charge NOK 50,- in forwarding fee for orders below NOK 1000,-.
Freight charge according to expenses for orders above NOK 1000,-. VAT not included.

9) COMPLAINT
By receipt customer must check goods for obvious defects which have to be claimed within 8 days from receipt. Otherwise acceptance of complaint can not be counted on.

10) GUARANTEE / SERVICES
Time of guarantee is calculated from our date of shipment, and applies to the extent that we are covered by our supplier's guarantee regulations. The guarantee does no longer apply if:

I) there has been encroached upon the goods without seller's consent
II) terms of payment is not fulfilled
III) the goods have been damaged due to unskilled treatment
IV) components which are sensitive for static electricity have not been unpacked and treated in a secure way.

Minimum requirements: CECC 00015's standards for handling of such components. The guarantee does not include fair wear and tear.

11) RESPONSIBLITY
Seller undertake to deliver faultless and functional capable goods according to existing technical specifications. Seller disclaim responsibility for any damage or loss which directly or indirectly may be caused due to failure or defect with the delivered goods, if carelessness from the seller can be limited up to the cost of the goods. The supplier's responsibility for defects with the supplied goods do not include secondary damage or loss.

12) CANCELLATION / RETURN
Binding sales contract is concluded when we have confirmed customer's purchase order. Any disagreements in our order confirmation must be reported to seller within 6 days. The agreement can not be altered without our permission, after acceptance from our supplier. If goods are wanted to be returned, a Return No must be assigned from seller. Returned goods without a Return No will not be accepted. By return of stock listed goods, 20% return fee is charged. Returned goods are shipped on customer's account and risk.

13) LOAN, RENT and DEMO
When borrowing of goods for demo/test, the date of return must be added to the document. If no date has been stated, date of return is two weeks from the date of the document. Before return, seller must be contacted for a Return No (RTK). Goods which have been sold with an agreed right of return within stated terms, shall also have a Return No. The Return No must be obtained before the stated date of return. Returned goods without a Return No, or which have not been packed in original packing, will not be accepted.

14) LIMITATIONS
If any of our suppliers claim limited delivery terms towards us, our terms of delivery will be restricted according to those.

15) SOFTWARE
Sold or borrowed software is not allowed to be copied or spread in other ways, without a written permission.

16) RE-EXPORT
Goods delivered from seller may be subject to special rules of exportation in their supplier's native country. Buyer is responsible to obtain necessary permissions for further export/re-sale.

17) QUESTION IN DISPUTE
To settle any dispute the Karmsund Herredsrett is approved the legal venue.

INSTRUCTIONS FOR THE CONSIGNEE

1) CONTROL
Control the goods immediately by receipt. Examine the quantity towards the invoice/packinglist/shipping documents. Look for outward defects on the packing which may indicate damage on or loss of contents. Control the container and the seals for any defects.

2) SECURING EVIDENCE
When defects on the goods have been found, evidence must be secured, and seller must be informed. Call the transporter and point out the defects. Add a description of the defects on the goods receipt, the forwarder's copy of the way-bill or on the driving slip.

3) RESCUE
Bound the damage. Try to restrict the damage and the loss. Seller will compensate expences incurred due to reasonable security efforts in addition to damage and loss.

4) COMPLAINT
Write immediately a complaint to the transporter or his agent. Forward immediately the complaint to the transporter or his agent, and hold the transporter responsible for the defects. The complaint must be sent at the latest:

- for carriage by sea: within 3 days
- for overland / air transportation within 7 days

5) DOCUMENTATION
For any claims the following documentation is required, and must be forwared to the company or their agent: invoice, way-bill and/or bill of landing, and/or statement of arrival, inspection document, besides a copy of the letter of complaint to the transporter.

Notes

CAUTION
This unit contains electrostatic sensitive devices.
Observe precautions for handling.

Computer Upgrading:

Customers who needs to open the computer to change PCI cards, install more memory, or set internal jumpers can do so without voiding the warranty. Before opening a unit's housing to remove or touch a board, proper ESD measurements must be taken.

1. Operator should ground himself by using a wrist band.

2. The wrist band should be connected to ground via a ground cord.

3. A one megaohm resistor, installed in the wrist connection end of the ground cord, is a safety requirement.

4. Alternatively an Static-dissipative ESD work mat could be positioned at the workplace. The 3M™ 8501 Portable Field Service Kit is a good choice for this purpose.

All assisting persons who might come into contact with the endangered boards must also use the ESD equipment.

Notes

Revision History

Rev.	By	Date	Notes
1	SE	14 Dec 05	First inital release.
2&3	SE	13 Mar 06	Revised Testing & Type Approval Section
4	SE	22 May 06	Revised Testing & Type Approval Section
5	SE	22 Aug 06	Type approval page removed, and information merged with the respective product specification pages.
6	SE	09 Oct 06	Revised technical drawings. 4 Rear USB ports instead of previous 3 ports.
7	SE	18 Jul 07	Revised general text elements where needed.
8	SE	24 Oct 07	Changed Contents of Package (2 power cables instead of 1)
9	SE BS	20 Nov 07	Revised specifications (removed two obsoleted options).
10	SE AK	04 Apr 08	Revised specifications (Environmental considerations). Revised company profile and company logos. Revised contents of package (power cables). Revised Declaration of Conformity.
11	SE	24 Nov 08	Added inches to drawings and specifications Revised general chapter text.
12	SE	14 Jan 2010	Added typenumbers to contents of package (page 4) Added computer introduction chapter (page 7) Updated layout/profile design of manual + other minor text changes
13	JE SE	12 Feb 2010	Revised specifications 512mb to 1024mb (page 18) ref: http://www.hatteland-display.com/mails/10_2010_ecn.html
14	JE SE	02 Dec 2011	Revised Contents of Package (page 4) Revised specifications (page 18) as per reference: http://www.hatteland-display.com/mails/29_2011_ecn.html http://www.hatteland-display.com/mails/49_2010_ecn.html http://www.hatteland-display.com/mails/42_2010_ecn.html http://www.hatteland-display.com/mails/43_2008_eol.html